

SPRING MIGRATION: UNRAVELING THE MYSTERIES

by JOE FLESKES, WILDLIFE RESEARCH BIOLOGIST, USGS

While we're storing away our waders and winding down at the end of hunting season, activities in the waterfowl world are really just getting ramped up. Increased courtship flights, intensive foraging, and a building urge to head north emanates from waterfowl flocks as a restless buzz. But where do ducks and geese go after they leave wintering areas such as the Central Valley, and how well are they doing during their travels north?

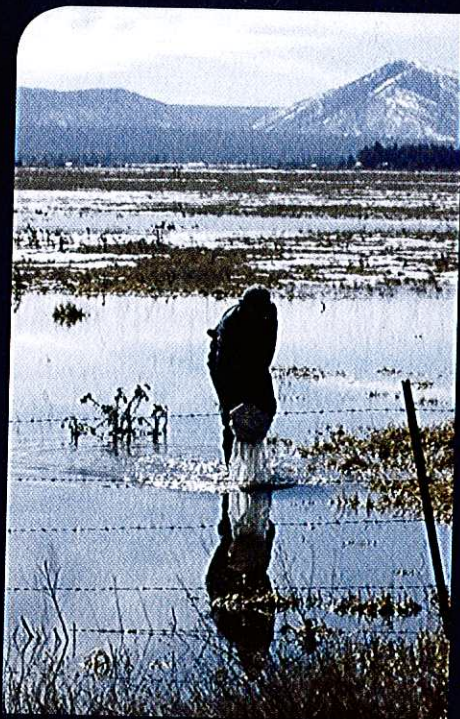
Due to the huge geographic scope and ephemeral nature of the migration landscape, our understanding of the ecology of waterfowl during the two migration periods is less complete than during the nesting and wintering periods. This is especially true during spring migration, because unlike during fall, few hunters are afield and band recoveries that provide data on migration routes and timing are rare. In addition, most waterfowl research programs initially focused on critically important breeding and wintering areas where birds spend most of their annual cycle. Research on spring ecology is much more recent and our picture of what birds are up to during spring migration is only just developing and still a bit fuzzy.

Improved electronic tracking technologies and new methods such as stable isotope analysis of feathers and genetic analysis of tissues have made the study of waterfowl movements, foraging habitats, survival, and habitat needs during spring migration more feasible. Despite these technologies, many miles of low tech "feet-in-the-waders" work are still needed. Also, due to the high cost of tracking technologies, conservation partnerships that leverage the resources and expertise of California Waterfowl with federal (US Geological Survey, US Fish and Wildlife Service), state (California Department of Fish and Wildlife, Oregon Department of Fish and Wildlife), and other non-governmental organizations (Ducks Unlimited, Tuscany Research Institute) has proven critical for tackling migration studies. These combined efforts are producing results, and some of the best information that we have acquired so far is on a species that is of special interest to California waterfowlers: the northern pintail.

Trail-blazing sprig have one of the broadest geographic ranges and longest flight capabilities of any dabbling duck, nesting far north into Alaska and wintering south into Mexico and beyond, with inter-flyway and inter-continental exchanges well documented through band returns and other data. Tracking of birds equipped with satellite and standard VHF radiotags has identified important spring migration



>> Pintails and other waterfowl used this flooded pasture in the SONEC region last spring. | PHOTO BY DAN SKALOS, USGS



>> A biologist samples flooded pasture for waterfowl foods in the SONEC region. | PHOTO BY DAN SKALOS, USGS

habitats and stopover areas, resulting in habitat conservation efforts to be focused on these areas. For nearly all pintails and most other waterfowl that winter in California, critical food resources during spring migration are provided by wetlands, flooded pastures, and other habitats in the southern Oregon and Northeastern California (i.e., SONEC) region.

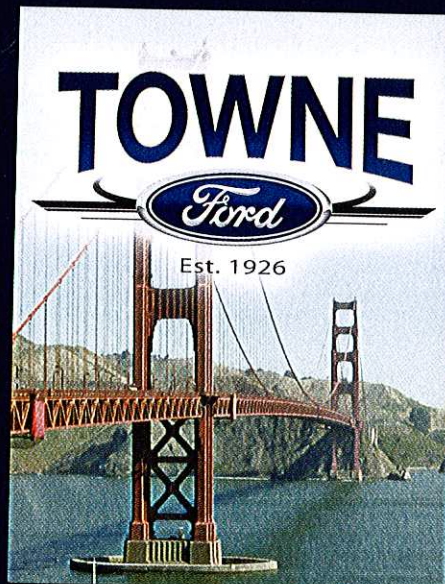
Flight is energetically very expensive, and long distance, over-water flights require huge reserves of energy.

California pintails start arriving in SONEC in early February with duration of stay in the region varying by breeding destination and migration route. Pintails that will be flying directly over the Pacific Ocean to Alaska stay in SONEC about two months on average compared to about one month for pintails heading to the Canadian prairies. The longer stay by Alaska-bound pintails allows time

for birds to acquire adequate energy reserves for the long over-water flight and to time their arrival when habitat conditions in Alaska have the greatest chance of being favorable. In contrast, prairie-bound pintails from California push the spring envelope, following the thawing of wetland habitats so that they can arrive and start nesting as early as prairie conditions allow that spring. These migration strategies are different than in the mid-continent, where pintails leave wintering areas such as Texas much later in spring and then transit rather rapidly through the upper Midwest, stopping for only a few days in a few areas such as the Platte River Basin in Nebraska before arriving on their prairie nesting areas.

Flight is energetically very expensive, and long distance, over-water flights such as when pintails fly directly from California to Alaska, require huge reserves of energy. So, as you would expect, ensuring abundant food resources in spring staging areas is

critical for ensuring successful spring-migration and subsequent breeding. I think we've all become more aware that we can't just pull the boards on our Central Valley marshes and flooded fields at the end of hunting season and expect waterfowl populations to thrive. Instead we've learned the need to maintain enough of these habitats through late winter and into spring to allow birds to start their journey



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north in good body condition. Similar conservation practices are equally important for migration habitats north of the Central Valley, and as we have now learned, those resources must be adequate to sustain spring-staging birds for a couple of months or more through late April and into May.

Recent information shows that California pintails and other waterfowl have definitely benefited from the efforts of the Central Valley Joint Venture and its partners. California pintails are

far better than their mid-continent brethren, having higher survival in winter and leaving the Central Valley in better condition than in the mid-continent. This advantage is maintained and even increased in SONEC as pintails gorge on highly abundant seeds, aquatic invertebrates, and other foods to add to their energy reserves. The SONEC advantage, however, is tenuous, as many key habitats that at times support a large portion of Pacific Flyway pintails and other species are unprotected from future land management changes. They

also depend upon water supplies that are at risk of being redirected for other uses.

Most waterfowl species have evolved in a landscape that can change drastically due to weather and thus are highly adaptable. However, conversion of spring-flooded pastures for other uses, wetland loss, redirection of water supplies, and other factors that reduce the amount or productivity of spring habitats could greatly lower overall waterfowl population productivity. How pintails and other waterfowl adapt their migration timing and strategies to a changing climate is yet to be seen. But enacting habitat conservation programs and policies that maintain a highly productive and waterfowl-friendly landscape will be critical to allow pintails and other waterfowl to achieve their full adaptive potential.

Biologists continue to analyze the data already collected to gain as many useful insights as possible in order to identify and answer those management questions which remain unresolved. Answers to all of the mysteries of spring migration will likely never be fully revealed. However, through sustained partnerships, work can continue to seek the answers that are needed to guide habitat conservation along a path that will end in nest bowls full of eggs, summer marshes full of scurrying down-covered ducklings and, hopefully, flocks of wing-locked sprig aiming for that landing hole you left in your carefully placed decoy spread.

Dr. Joe Fleskes is a wildlife research biologist with US Geological Survey's Western Ecological Research Center stationed in Dixon, California. He has conducted management-focused research on waterfowl and their habitats in the Pacific Flyway and elsewhere for more than 30 years.



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